ATOP-R&D

Human Factors Newsletter # 06-03

January 28, 2006 – February 10, 2006

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Technical Note: Ahlstrom, U., & Friedman-Berg, F. (2005). *Subjective Workload Ratings and Eye Movement Activity Measures* (DOT/FAA/CT-05/32). Atlantic City International Airport, NJ: Federal Aviation Administration, William J. Hughes Technical Center.

Abstract

In the present study, we evaluated the possibility of using eye movement activity measures as a correlate of cognitive workload. Using data from a high-fidelity human-in-the-loop weather simulation, we explored eye activity measures like pupil diameter, blink duration, and saccade distance, and assessed their relationship to subjective workload ratings. In our initial analysis, we established that although there was no significant effect of weather tool use on subjective

workload ratings, there was a significant relationship between subjective workload ratings and our task load variable aircraft density. We found a linear increase in workload ratings with an increasing number of aircraft in the sector. In a subsequent analysis, we assessed the relationship between eye movement activity measures and aircraft density. We found that the mean blink duration and the mean saccade distance decreased as aircraft density increased, while the mean pupil diameter increased with an increasing number of aircraft in the sector. After establishing the relationship between these eye activity metrics and subjective workload, we evaluated whether we could use changes in eye movement activity along with other system state variables, like distance to weather from the outer marker, to measure ongoing controller workload. We developed both individual controller models and a general model (across controllers) to assess whether it was possible to predict the minute-by-minute number of aircraft in the sector. Using both multiple regression modeling and neural network models, we were able to produce individual controller models and general models with good prediction performances. We discuss possible applications for these findings in future air traffic control (ATC) research, in adaptive automation, and in ATC interface design.

This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 5: Enhance the safety of FAA's air traffic systems. It also supports the Administrator's Flight Plan Goal for Greater Capacity, Objective 3: Increase on-time performance of scheduled carriers.

Points of Contact: B.Bunting, U.Ahlstrom, WJHTC

Unmanned Aerial Systems (UAS): Kevin Williams participated in the RTCA Special Committee 203 meeting on UAS that was held in San Diego, CA on January 24-26, 2006. Committee activities were focused on factors associated with the introduction of UAS into the National Airspace System. Tasks involved in different phases of UAS flights were reviewed and categorized as an element of navigation, aviation, and communication. *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 2: Reduce the number of fatal accidents in general aviation.* (K. Williams, CAMI)

En Route Automation Modernization (ERAM): The ERAM Hardware Early User Involvement Event (EUIE) has been completed. This was the second EUIE occurrence under the human factors maintainer portion of the ERAM program. The EUIE was conducted at the Lockheed Martin facilities in Rockville, MD. The laboratory provided representative baseline hardware equipment racks and one baseline M&C workstation. Interaction with the workstation was on a limited basis. ERAM Technical Operations user team members were, for the first time, able to physically see and interact with the hardware that is to be provided under the ERAM program.

Personnel from ATO-P provided leadership and review of human factors issues in the conduct of the EUIE. Team members evaluated maintainability and suitability of ERAM hardware, including rack design, equipment elevations, cabling, and removal and replacement of components. In addition, human factors design guidelines and considerations regarding clearance for maintenance in the standing, kneeling and reaching positions were evaluated.

ATO-P personnel were responsible for the collection, consolidation, prioritization, and presentation of findings during caucuses and the final debriefing meeting.

The EUIE was conducted using scripted maintenance scenarios. Due to the number of participants and laboratory space restrictions, it was necessary to perform more than one session for a given scenario. Relevant comments and any difficulties experienced by user team members were recorded and discussed for each session. Ample time was provided for meeting attendees who were not part of the user team but had a vested interest in ERAM, i.e., training, test and second level maintenance personnel. *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 5: Enhance the safety of FAA's air traffic systems. It also supports the Administrator's Flight Plan Goal for Greater Capacity, Objective 3: Increase on-time performance of scheduled carriers.* (T. Yuditsky, WJHTC)

ATC Skill Enhancement, Situational Awareness Presentations:

- **You Said Go Left, Right?** On Wednesday, February 22, 2006, two informational briefings are scheduled in Conference Room 3A, A-Level, Wilbur Wright Building (FOB 10B) for anyone interested in ATC skill enhancement and methods for improving pilot-controller communications. Each will be repeated to accommodate scheduling conflicts.

0800 – 0930	ATC Skills Training (NATPRO 1 & 2)
0930 -- 1000	Break
1000 -- 1130	ATC Skills Training (NATPRO 1 & 2)
1130 -- 1300	3D & Spatial Audio for ATC SA
1300 -- 1330	Break
1330 -- 1500	3D & Spatial Audio for ATC SA

NATPRO 1 & 2*: If It's Not a Challenge, It's Not NATPRO*
by Dr. Julia Pounds (CAMI) and Mr. Randall Breedlove (CCW, Inc.).

"Pay Attention" - National Air Traffic Professionalism Program (NATPRO Series 1) cognitive skills training to enhance visual concentration was tested at Miami Air Route Traffic Control Center (ARTCC) in FY 2003 and expanded to 20 other ARTCCs by the end of CY 2005. Results from the facilities' activities through CY 2005 will be presented.

"Listening Skills for ATC" – Concurrent with the CY 2005 facility activities, a feasibility study was conducted by CAMI to determine whether a similar approach could be developed for practicing auditory attention and read back hear back skills. The awareness seminar for the prototype will be demonstrated and the practicum suite of exercises for read back hear

back skills will be available to try. This training (NATPRO Series 2) extends the model of Series 1, but is more streamlined and will be more cost effective to deploy.

ATC SA: Spatial Audio Displays for Improved Situational Awareness (SA) in ATC Tasks by Dr. Douglas S. Brungart and Mr. Brian Simpson (USAir Force Battlespace Acoustics Branch, Air Force Research Laboratory, Wright-Patterson Air Force Base, OH).

Traditional monaural audio displays lack the spatial information that listeners normally use to localize and segregate sounds in their surrounding environment. 3D Audio is a technology that can be used to restore this auditory location information to arbitrary sound signals presented over stereo headphones. In this presentation, researchers will briefly describe this technology and discuss two ways it could be used to increase controller performance and decrease workload in air traffic control tasks.

First, 3D Audio can enhance performance in multi-channel communications tasks both by increasing the intelligibility of the individual channels and by helping the controller keep track of which information is spoken by which talker (i.e. "who said what"). Second, an interactive 3D Audio display could be used for tower controllers to maintain situational awareness about the locations of different aircraft. In this application, controllers would actually hear the individual communication signals come from the location of the associated aircraft, enabling them to quickly locate those aircraft on the airfield and identify potential problems. In this portion, researchers will discuss how an operational error at Waukegan Regional Airport in 2004 could have easily been prevented with this technology. They will also provide demonstrations of 3D Audio technology both for improved speech communication and for improved situational awareness for tower controllers.

These research activities support the Administrator's Flight Plan Goal for Increased Safety, Objective1, 2 and 5: Reduce the commercial fatal accident rate; Reduce the number of fatal accidents in general aviation; Enhance the safety of FAA's air traffic systems.

Point of Contact: J. Pounds, CAMI

Presentation at the February 2006 Meeting of the South Jersey Chapter of the Human Factors and Ergonomics Society: Evaluating Controller Use of Advanced Weather Products by Evaluating User Interaction Patterns. Ferne Friedman-Berg, Ulf Ahlstrom. William J. Hughes Technical Center.

Abstract

Unfavorable weather conditions impact system safety and system throughput. By providing controllers with access to advanced weather products, we should be able to increase weather situational awareness, decrease workload, increase system safety, and increase system throughput. Although it is not currently the responsibility of controllers to keep pilots away from weather, in our study, we evaluated how controllers in a human-in-the-loop simulation used advanced weather products, and how this use impacted performance, workload, and safety.

This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 5: Enhance the safety of FAA's air traffic systems. It also supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 1: Make the organization more effective with stronger leadership, increased commitment of individual workers to fulfill organization-wide goals, and a better prepared, better trained, safer, diverse workforce.

Point of Contact: U. Ahlstrom, WJHTC

New Federal Air Surgeon Named: Frederick Tilton, M.D. is the newly appointed Federal Air Surgeon. Dr. Tilton has served as Deputy Federal Air Surgeon for the past six years. Prior to joining the agency, he had a distinguished career with both the US Air Force and the Boeing Company. He is a graduate of the US Military Academy and logged in operational time in the medical corps where he was senior flight surgeon and also held key positions including Chief of Flight Medicine in the Surgeon General's Office. Dr. Tilton was Regional Medical Director of Boeing's Wichita facility. He was promoted to Corporate Medical Director and moved to Seattle where he directed Boeing's overall medical program. Dr. Tilton received his medical degree from the University of New Mexico and a Masters in Public Health from the University of Texas. He is certified by the American Board of Preventive Medicine in Aerospace Medicine and Occupational Medicine. He is also a Fellow of the Aerospace Medical Association and the American College of Preventive Medicine. (T. Kraus, ATO-P)

Human Factors Requirements for Future Air Traffic Systems. On February 9, 2005, human factors representatives (including those from FAA, NASA, and the Volpe Center) met at FAA headquarters for an exploratory discussion. The purpose was to identify activities being conducted and activities that need to be conducted in support of human factors research and engineering requirements for achieving the implementation of future air traffic systems. Objectives of the meeting were to: (a) identify the scope of current activities that support integrating human factors in future air traffic systems; (b) identify human factors research requirements and challenges for future air traffic systems; (c) establish a foundation for future technical exchanges on human factors considerations for future Air Traffic Management concepts and development; and, (d) understand the near-term human factors activities that are necessary to support the National Airspace System Enterprise Architecture framework, baselines, and analyses. Presentations were made across a range of topics including those on workforce development efforts, the human factors role in National Airspace System Enterprise Architecture development, human-automation interaction in the Next Generation Air Transportation System (NGATS), "Big Airspace" studies, and simulation capabilities and requirements for future systems. Discussions around the presentations reflected recognition of the value of this collaborative activity as well as a general need for increased planning and coordination of the disparate activities related to human factors research and engineering products focused on transitioning to NGATS. *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 5: Enhance the safety of FAA's air traffic systems.* (G. Hewitt, ATO-P R&D)

New Grant Submission Process: Please be aware that all new proposals for the FAA Aviation Research Grants Program must be submitted electronically by researchers at

http://www.grants.gov. This information is also posted on the FAA Grants Office website at http://www.tc.faa.gov/logistics/gov. Currently, the FAA Grants Office is accepting amended proposals for follow-on work through the mail. However, they will eventually be migrating toward submission of amendments through grants.gov. Requests for no-cost extensions are being accepted by e-mail. If and when that changes, we will notify you. *This activity supports the Administrator's Flight Plan Goal for Organizational Excellence, Objective 3: Make decisions based on reliable data to improve our overall performance and customer satisfaction.*

(T. McCloy, ATO-P R&D)

Quarterly Reports: First quarter FY 2006 reports for general aviation, vertical flight, aviation maintenance, and unmanned aerial systems human factors research can be accessed by pointing to the following web sites:

General Aviation Human Factors report: http://www.hf.faa.gov/docs/508/docs/gaFY06Q1.pdf

Vertical Flight Human Factors report:http://www.hf.faa.gov/docs/508/docs/vfFY06Q1.pdf

Aviation Maintenance Human Factors report:http://www.hf.faa.gov/docs/508/docs/maintFY06Q1.pdf

Unmanned Aerial Systems Human Factors report:http://www.hf.faa.gov/docs/508/docs/uavFY06Q1.pdf

These research activities support the Administrator's Flight Plan Goal for Increased Safety, Objectives 1and 2: Reduce the commercial fatal accident rate; Reduce the number of fatal accidents in general aviation.

Point of Contact: W. Krebs, ATO-P R&D

Advance Qualification Program (AQP): United Airlines hosted the Annual Industry AQP Conference in Denver, CO on February 7-9, 2006. One hundred six airline representatives attended the conference, including all major airlines with mature AQP programs. There were also many new AQP entrants. For the new entrants, this meeting was their first exposure to this venue for sharing ideas and lessons-learned on AQP development issues from airlines and the research community. Several FAA researchers made presentations. Dr. Florian Jentsch and Dr. Janeen Kochan, the University of Central Florida, presented on training for unexpected events. Dr. Tim Goldsmith and Dr. Peder Johnson, the University of New Mexico, presented methods to develop valid grading systems and rater training. Ms. Susan Mangold, Battelle Memorial Research Center, presented methods to integrate Crew Resource Management into the AQP training through situational approaches. Additionally, these researchers attended breakout sessions addressing training intervals. Dr. Judith Burki-Cohen, Volpe Center, attended the general meeting and breakout sessions, discussing simulator motion and training. *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 1: Reduce the commercial fatal accident rate.* (E. Edens, ATO-P R&D)

Volpe Center Posts Electronic Flight Bag (EFB) Job Aid, Draft Version 1.0 Online. The FAA recently approved release of the Draft EFB Job Aid, dated January 26, 2006. An earlier version of the document was the subject of discussion for the FAA-Industry EFB meeting in

Cambridge, Massachusetts in September 2005. The document is now available online at: http://www.volpe.dot.gov/opsad/efb/index.html#jobaid.

The draft EFB Job Aid provides clarification and further elaboration of the material in Advisory Circular (AC) 120-76A for FAA Flight Standards field inspectors who conduct operational approvals of these devices. The scope of the draft Job Aid is limited to that covered in the AC. This draft Job Aid should be used in combination with AC 120-76A. The primary intended audience for this material is the FAA inspector. However, the materials may also be useful to EFB manufacturers and operators.

The EFB Job Aid was approved for release in a draft form to Flight Standards field offices recently for the limited use it may provide inspectors. The document was produced by the FAA Aircraft Certification Service and Flight Standards Service with special assistance from the Volpe Center. Feedback on the document should be sent to to Peter Skaves (AIR-130) (peter.skaves@faa.gov) or Rich Adams (AFS-430) (rich.adams@faa.gov).
This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 1: Reduce the commercial fatal accident rate. (D.Chandra, Volpe NTSC)

Flight Symbology: On February 7 and 9, 2006, Dr. Divya Chandra participated via teleconference in a meeting with the Society of Automotive Engineering G-10 Committee for Aerospace Behavioral Engineering Technology, Aeronautical Charting Subcommittee. The topic was the latest Volpe Flight Symbology study. On the first day, Dr. Chandra presented the status of the project which is currently ending the data collection phase. Data analysis is now beginning, and the committee was given a preview of analysis plans. The second day was spent reviewing the study and providing detailed comments, which were reviewed with Dr. Chandra. This discussion gave the committee an early look at the research findings, and helped Volpe researchers plan the data analysis in more detail. A more thorough analysis of the data will be presented to the committee at an upcoming meeting in Montreal. Stephen Popkin, Chief of the Volpe Human Factors Division, attended a portion of the meeting in person. CAMI researcher Dr. Kevin Williams also participated in committee meetings. His area of interest was on pilot qualifications, control interfaces and level of controls. *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objective 1: Reduce the commercial fatal accident rate*. (D. Chandra and M. Yeh, Volpe NTSC; K. Williams, CAMI)

Voluntary Safety Program: Tom Chidester traveled to Washington, D.C., January 30-31, 2006 to participate in the Voluntary Safety Information Sharing (VSIS) Aviation Rulemaking Committee (ARC) meeting. Prior to joining the FAA, Dr. Chidester served as NASA's Voluntary Aviation Safety Information Sharing Project program manager. At CAMI, he has been tasked to liaison with NASA-Ames to verify completion of the distributed archive infrastructure in accordance with specifications provided by the VSIS ARC, and to provide subject-matter expertise to the ARC in the development and completion of analyses. *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objectives 1and 2: Reduce the commercial fatal accident rate;* Reduce the number of fatal accidents in general aviation. (T. Chidester, CAMI)

National Air Traffic Professionalism (NATPRO): If It's Not a Challenge, It's Not NATPRO – Keeping the Mental Edge.
A working group convened in Atlanta on February 6-8, 2006 to review materials that had been developed for a cognitive skills training program to reduce read back hear back errors. Past operational error and performance management initiatives focused on emphasizing the importance of good communication skills and produced briefing materials for facilities, such as the video titled "Preventing Read Back Errors" which highlights strategies to reduce the complexity of each communication. These initiatives and others have sometimes reduced read back-hear back errors in the short term, but appeared to have had little effect on reducing and maintaining the decrease over the long term.

Skills training programs are used by professionals in other areas to improve individuals' performance, such as football players, baseball players, and golfers. These programs often consist of personalized assessment and instruction with feedback provided to each individual about how to better integrate mental and motor skills for best performance. Designed as a one-on-one activity between the performance coach and the professional player, this type of individualized performance coaching is time and resource intensive and, thus, prohibitive to implement in ATC facilities. Nevertheless, individual performance and professional improvement are relevant and important for ATC operational personnel. Thus a feasibility project was conducted to determine whether a cognitive skills training approach could address read back hear back factors.

The kick-off meeting was held in September, 2005 at CAMI. A two-part training package was developed consisting of seminar materials and their corresponding practicum suite of skills practice exercises. Seminar topics include the mental processes related to hearing, listening, concentration on auditory information, managing auditory and visual information, and filtering irrelevant information. In the February 2006 Atlanta meeting, experienced NATPRO coaches from four Air Route Traffic Control Centers (Memphis, Jacksonville, District of Columbia, and Atlanta) examined the materials, tested the skills practice exercises, and provided their feedback to the development team. *This research activity supports the Administrator's Flight Plan Goal for Increased Safety, Objectives 3 and 5: Reduce the risk of runway incursions; Enhance the safety of FAA's air traffic systems.*(J. Pounds, CAMI)

More information on human factors research can be found at the FAA Human Factors (ATOP-R&D) web site: http://www.hf.faa.gov

Paul Krois
FAA (ATO-P R&D Human Factors)

February 21-26, 2006 – Asian Aerospace 2006, Changi Exhibition Centre, Singapore www.asianaerospace.com

February 26-28, 2006 – Heli-Expo, Dallas, TX http://www.heliexpo.com

February 27-28, 2006 – NBAA Flight Operations Manual Workshop, Dallas, TX
http://web.nbaa.org/public/cs/fomw/200602/

February 28 – March 1, 2006 – 31st Annual FAA Aviation Forecast Conference, Wash, DC http://www.faa.gov/news/conferences/aviation_forecast_2006/.

March 2-3, 2006 – APA Division 21(Applied Experimental Psychology), Division 19 (Military Psychology) and the Potomac Chapter, Human Factors and Ergonomics Society Mid-Year Symposium, George Mason University, Fairfax, VA
http://www.apa.org/divisions/div21/.homepage.html

March 12-14, 2006 – AirCargo 2006, Sheraton Bal Harbour, FL
http://www.aircargoconference.com

March 13-15, 2006 – Flight Safety Foundation 18th Annual European Aviation Safety Seminar, Athens, Greece http://www.flightsafety.org/seminars.html#eass

March 20-23, 2006 – 16th Annual AAMI/FDA International Conference on Medical Device Standards and Regulation, Hyatt Regency, Reston, VA
http://www.aami.org/meetings/isc/index.html

March 22 - 25, 2006 - Society for Behavioral Medicine Annual Meeting and Scientific Sessions, San Francisco, CA www.sbm.org/annualmeeting/index.html

March 23-25, 2006 - 17th Annual International Women in Aviation Conference, Opryland Hotel Nashville, TN http://www.wai.org/

March 23-27, 2005 – IA Summit 2006, Hyatt Regency, Vancouver, BC, Canada
http://www.iasummit.org/

March 28-30, 2006 – Aviation Industry Expo, Las Vegas, NV
http://www.aviationindustryexpo.com

April 4-10, 2006 – Sun 'n Fun, Lakeland, FL http://www.sun-n-fun.org/content/

April 6-7, 2006 – National Human Capital Summit, Chicago Marriott Downtown, Chicago, IL
http://www.humancapitalinstitute.net/conference_national.html

April 17-19, 2006 – NBAA Maintenance Management Conference, Dallas, TX
http://web.nbaa.org/public/cs/mmc/200604/

April 18-20, 2006 – FAA Aviation Safety Programs Conference, Grand Hyatt Hotel, Denver, CO http://www.aviationsafetyconference.com

April 22-27, 2006 – CHI 2006, Montreal, Quebec, Canada
http://www.chi2006.org/call/hcioverviews.php

April 23-28, 2006 - Avionics Systems Division Meeting, New Orleans, LA (TBD)
lemon@sae.org

April 24-26, 2005 – ATCA/FAA/NASA Annual Technical Symposium, Atlantic City, NJ
http://www.atca.org/activities/event_items.asp?month=4&year=2006&item_id=3557

April 25-27, 2006 – Maintenance, Repair & Overhaul (MRO) Conference & Exhibition, Phoenix Civic Plaza, Phoenix, AZ http://www.aviationnow.com/conferences/mromain.htm

May 1-4, 2006 - 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference; 14th AIAA/ASME/AHS Adaptive Structures Conference; 7th AIAA Gossamer Spacecraft Forum; 2nd AIAA Multidisciplinary Design Optimization Specialist Conference; 1st AIAA Non-Deterministic Approaches Conference, Hyatt Regency Newport, Newport, RI http://www.aiaa.org/

May 3-5, 2006 - 6th Annual European Business Aviation Convention & Exhibition (EBACE2006), *Geneva, Switzerland http://web.nbaa.org/public/cs/amc/*
May 9-11, 2006 – Flight Safety Foundation 51st Annual Corporate Aviation Safety Seminar, Phoenix, AZ http://www.flightsafety.org/seminars.html#eass

May 14-18, 2006 - 77th Annual Scientific Meeting of the Aerospace Medical Association, Caribe Royale Hotel, Orlando, FL http://www.asma.org/

May 15-16, 2006 – DoD TAG, Las Vegas, NV http://hfetag.dtic.mil/meetschl.html

May 15-16, 2006 – ASTM F38 Unmanned Aircraft Systems Committee Workshop, Sheraton Centre Toronto; Toronto, ON CAN http://www.astm.org/

May 17-19, 2006 – 17th International Conference on Heating and Ventilation, Prague, Czech Republic http://www.acv2006.cz

May 22-24, 2006 - 9th IFAC Symposium on Automated Systems Based on Human Skill And Knowledge, Nancy, France http://www.cdc.gov/niosh/exhibits.html

May 23-25, 2006 – 2006 International Air Cargo Conference, Brown Convention Center, Houston, TX mailto:terryiacc@bellsouth.net

May 25-28, 2006 – American Psychological Society 18th Annual Convention, New York Marriott Marquis, New York City, NY http://www.psychologicalscience.org/convention/

June 6-8, 2006 – IEE System Safety Conference, Savoy Place, London, UK
http://www.iee.org/events/event/CE202BA5-A0D3-8FE7-2F35A59A02C8B3F3

June 8-10, 2006 – NTSB Bar Association Annual CLE Conference, NTSB Conference Center, L'Enfant Plaza, Wash, DC http://www.ntsbbar.org/

June 11-14, 2006 – The American Society of Safety Engineers Safety 2006 Conference, Washington State Convention and Trade Center, Seattle, WA
http://www.asse.org/2006pdcallforpapers.pdf

June 12-16, 2006 – UPA 2006 – 15th Annual Conference, Broomfield, CO
http://www.usabilityprofessionals.org/conferences_and_events/upa_conference/2006/

June 24-26, 2006 – AAMI Conference & Exposition, Wash, DC
http://www.aami.org/proposals/index.html

June 24-28, 2006 – ASHRAE Annual Conference, Quebec, Canada http://www.ashrae.org/

June 26-29, 2006 - General Aviation Technology Conference , Hyatt Hotel, Wichita, Kansas,

July, 2006 - 26th International Congress of Applied Psychology, Athens, Greece
dgeorgas@dp.uoa.gr ,
http://www.erasmus.gr/dynamic/conventions.asp?conv_id=21r/dynamic/conventions.asp?conv_id=21

July 10-14, 2006 – IEA 2006, 16th World Congress on Ergonomics, Maastricht, The Netherlands
http://www.iea2006.org/

July 24-30, 2006 – EAA AirVenture, Oshkosh, WI http://www.airventure.org/

July 26-29, 2006 – CogSci 2006, Sheraton Vancouver Wall Centre, Vancouver, BC, Canada
http://www.cogsci.rpi.edu/~rsun/cogsci2006/

August 1, 2006 - The International Journal of Aviation Psychology, Special Issue on Air Traffic Control Human Factors, CALL FOR PAPERS. Please contact Jim Hitt at hitt_james@bah.com <mailto:hitt_james@bah.com> or Mike McAnulty at mike.mcanulty@faa.gov <mailto:mike.mcanulty@faa.gov> with any queries, or to submit papers.

August 10-13, 2006 – American Psychological Association Annual Meeting, New Orleans, LA
http://www.apa.org/convention05/future.html

August 21-24, 2006 - AIAA Modeling and Simulation Technologies Conference and Exhibit. Keystone Resort and Conference Center, Keystone, CO
http://www.aiaa.org/content.cfm?pageid=1

August 21-24, 2006 - AIAA Guidance, Navigation, and Control Conference and Exhibit, Keystone Resort and Conference Center, Keystone, CO
http://www.aiaa.org/content.cfm?pageid=1

September 6-8, 2006 - 11th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Renaissance Portsmouth, Portsmouth, VA,
http://www.aiaa.org/content.cfm?pageid=1

September 10-14, 2006 - 54th International Congress of Aviation and Space Medicine, Bangalore, India. A preliminary registration form may be found at http://www.isam-india.org/conference44/newreg.php.

September 12-14, 2006 – 23rd International Air Cargo Forum and Exposition, Calgary, Ontario, Canada http://www.tiaca.org

September 20-22, 2006 – HCI-Aero 2006, Seattle, WA http://www.eurisco.org/hci-aero2006
Note: Submission Deadlines:
15th March 2006 - Full Research Papers
15 April 2006 - Industry Papers
15 April 2006 - Early Stage Research Papers
15 April 2006 - Panels, Workshops
15 April 2006 - Posters and Demos

September 26-27, 2006 – AIAA Aviation Technology, Integration and Operations Conference, Hyatt Regency, Wichita, KS http://www.aiaa.org/content.cfm?pageid=1

October 8-11, 2006 - IEEE International Conference on Systems, Man, and Cybernetics, The Grand Hotel, Taipei, Taiwan http://ins.cn.nctu.edu.tw/smc2006/
March 1, 2006: Deadline for submission of papers (full papers only)

October 15-19, 2006 – Digital Avionics Systems Conference, 25th DASC Network Centric Environment: The Impact on Avionics and Systems, Hilton Portland and Executive Tower, Portland, OR www.dasconline.org
February 19, 2006 – Deadline for submitting abstracts of 1000 words

October 16-20, 2006 – Human Factors and Ergonomics Society Annual Meeting, San Francisco Hilton, San Francisco, CA http://www.hfes.org/web/HFESMeetings/meetings.html
Key Dates:

March 1, 2006 - Proposals (all presentation types)

April 18, 2006 - Accept/reject letters sent

May 8, 2006 - Workshop preliminary handouts due

May 16, 2006 - Proceedings paper prep instructions available

May 22, 2006 - Workshop final acceptances sent

June 5, 2006 - Online preliminary program available

June 26, 2006 - Proceedings papers due

September 8, 2006 - Early registration deadline

October 17-19, 2006 – NBAA 59th Annual Meeting and Convention, Orlando, FL http://web.nbaa.org/public/cs/amc/futuresites.php

October 23-25, 2006 – 44th Annual SAFE Symposium, Reno Hilton Hotel, Reno, NV http://www.safeassociation.org/symposium.htm

October 23-26, 2006 - DoD Maintenance Symposium & Exhibition, Reno Hilton, Reno, Nevada http://www.sae.org/events/conferences/aerospace/

October 29 - November 1, 2006 – ATCA Convention and Exposition, Marriott Wardman Park, Wash, DC

November 9-11, 2006 – AOPA Expo 2006, Palm Springs, CA http://www.aopa.org/expo/2005/virtual/

November 13-14, 2006 ASTM F38 Unmanned Aircraft Systems Committee Workshop, Hyatt Regency, Atlanta, GA http://www.astm.org/

January 8-11, 2007 - 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno Hilton, Reno, NV http://www.aiaa.org/content.cfm?pageid=1

January 27-31, 2007 - ASHRAE Winter Meeting, Dallas, TX jyoung@ashrae.org, or www.ashrae.org.

May 21-22, 2007 - ASTM F38 Unmanned Aircraft Systems Committee Workshop, Waterside Convention Center, Norfolk, VA http://www.astm.org/

June 23-27, 2007 – ASHRAE Annual Meeting, Long Beach, CA jyoung@ashrae.org, www.ashrae.org

July 22-27, 2007 – 12th HCI International, Beijing, China http://www.hcii2007.org/

September 25-27, 2007 - NBAA 60th Annual Meeting and Convention, Atlanta, GA http://web.nbaa.org/public/cs/amc/futuresites.php

October 1-5, 2007 – Human Factors and Ergonomics Society Annual Meeting, Baltimore Waterfront Marriott Hotel, Baltimore, MD http://www.hfes.org/web/HFESMeetings/meetings.html

Note: Calendar events in Italics are new since the last Newsletter

Comments or questions regarding this newsletter?
Please contact Bill Berger at (334) 271-2928
or via e-mail at bill.ctr.berger @faa.gov